

Serial No.: 09/800,187

Atty Docket No. HUV-037.01

Applicant(s): Grozinger et al.

Title: **CLASS II HUMAN HISTONE DEACETYLASES AND USES  
RELATED THERETO**

The following was/were received in the USPTO mail room on the date stamped hereon:

1. Statement Under Section 111(c) Of The Patent Rules (1 page)
2. Sequence Listing Paper Copy (42 pages);
3. Electronic Copy of Sequence Listing (1 diskette);
4. Certificate of First Class Mailing (1 page) and
5. This Return Postcard

Atty: JAZarutskie

Mailing Date: October 30, 2003

Serial No.: 09/800,187

Atty Docket No. HUV-037.01

Applicant(s): Grozinger et al.

Title: **CLASS II HUMAN HISTONE DEACETYLASES AND USES  
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The following was/were received in the USPTO mail room on the date stamped hereon:

1. Statement Under Section 111(c) Of The Patent Rules (1 page)
2. Sequence Listing Paper Copy (42 pages);
3. Electronic Copy of Sequence Listing (1 diskette);
4. Certificate of First Class Mailing (1 page) and
5. This Return Postcard

Atty: JAZarutskie

Mailing Date: October 30, 2003



**IN THE UNITED STATES PATENT OFFICE**

Atty. Docket No.: HUV-037.01

In re patent application of

HARVARD UNIVERSITY

Inventors: GROZINGER, CHRISTINA  
HASSIG, CHRISTIAN  
SCHREIBER, STUART

Serial No.: US 09/800,197

Filed: March 5, 2001

For: CLASS II HUMAN HISTONE DEACETYLASES AND USES RELATED THERETO

**STATEMENT UNDER SECTION 111(c)**  
**OF THE PATENT RULES**

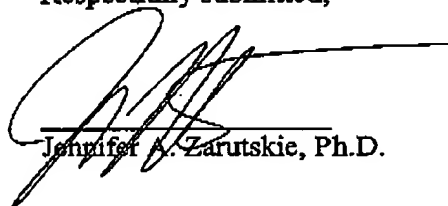
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Alexandria, VA 22313-1450

Sir:

The undersigned hereby states that the Sequence Listing submitted concurrently herewith does not include matter which goes beyond the content of the application as filed and that the information recorded on the diskette submitted concurrently herewith is identical to the written Sequence Listing.

Respectfully submitted,

10/30/03  
Date

  
Jennifer A. Zarutskie, Ph.D.

Foley Hoag LLP  
155 Seaport Boulevard  
Boston, MA 02210  
(617) 832-1754

20/567279.1

## SEQUENCE LISTING

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SCHREIBER, STUART L.

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Gln Ser Ser Pro Leu Pro Gln Ser Pro Gln Ala Leu Gln Gln Leu Val  
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Met Gln Gln Gln His Gln Gln Phe Leu Glu Lys Gln Lys Gln Gln Gln  
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Leu Gln Leu Gly Lys Ile Leu Thr Lys Thr Gly Glu Leu Pro Arg Gln  
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Pro Thr Thr His Pro Glu Glu Thr Glu Glu Glu Leu Thr Glu Gln Gln  
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Glu Val Leu Leu Gly Glu Gly Ala Leu Thr Met Pro Arg Glu Gly Ser  
565 570 575

Thr Glu Ser Glu Ser Thr Gln Glu Asp Leu Glu Glu Glu Asp Glu Glu  
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Glu Asp Gly Glu Glu Glu Glu Asp Cys Ile Gln Val Lys Asp Glu Glu  
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Gly Glu Ser Gly Ala Glu Glu Gly Pro Asp Leu Glu Glu Pro Gly Ala  
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Gly Tyr Lys Lys Leu Phe Ser Asp Ala Gln Pro Leu Gln Pro Leu Gln  
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Val Tyr Gln Ala Pro Leu Ser Leu Ala Thr Val Pro His Gln Ala Leu  
645 650 655

Gly Arg Thr Gln Ser Ser Pro Ala Ala Pro Gly Gly Met Lys Ser Pro  
660 665 670

Pro Asp Gln Pro Val Lys His Leu Phe Thr Thr Gly Val Val Tyr Asp  
675 680 685

Thr Phe Met Leu Lys His Gln Cys Met Cys Gly Asn Thr His Val His  
690 695 700

Pro Glu His Ala Gly Arg Ile Gln Ser Ile Trp Ser Arg Leu Gln Glu  
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Thr Gly Leu Leu Ser Lys Cys Glu Arg Ile Arg Gly Arg Lys Ala Thr  
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Leu Asp Glu Ile Gln Thr Val His Ser Glu Tyr His Thr Leu Leu Tyr  
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Gly Thr Ser Pro Leu Asn Arg Gln Lys Leu Asp Ser Lys Lys Leu Leu  
755 760 765

Gly Pro Ile Ser Gln Lys Met Tyr Ala Val Leu Pro Cys Gly Gly Ile  
770 775 780

Gly Val Asp Ser Asp Thr Val Trp Asn Glu Met His Ser Ser Ser Ala  
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Val Arg Met Ala Val Gly Cys Leu Leu Glu Leu Ala Phe Lys Val Ala  
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Ala Gly Glu Leu Lys Asn Gly Phe Ala Ile Ile Arg Pro Pro Gly His  
820 825 830

His Ala Glu Glu Ser Thr Ala Met Gly Phe Cys Phe Phe Asn Ser Val  
835 840 845

Ala Ile Thr Ala Lys Leu Leu Gln Gln Lys Leu Asn Val Gly Lys Val  
850 855 860

Leu Ile Val Asp Trp Asp Ile His His Gly Asn Gly Thr Gln Gln Ala  
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Phe Tyr Asn Asp Pro Ser Val Leu Tyr Ile Ser Leu His Arg Tyr Asp  
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Asn Gly Asn Phe Phe Pro Gly Ser Gly Ala Pro Glu Glu Val Gly Gly  
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930 935 940

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Ala Gly Phe Asp Ala Val Glu Gly His Leu Ser Pro Leu Gly Gly Tyr  
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Ser Val Thr Ala Arg Cys Phe Gly His Leu Thr Arg Gln Leu Met Thr  
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Leu Ala Gly Gly Arg Val Val Leu Ala Leu Glu Gly Gly His Asp Leu  
995 1000 1005

Thr Ala Ile Cys Asp Ala Ser Glu Ala Cys Val Ser Ala Leu Leu Ser  
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Val Glu Leu Gln Pro Leu Asp Glu Ala Val Leu Gln Gln Lys Pro Asn  
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His Trp Ser Cys Val Gln Lys Phe Ala Ala Gly Leu Gly Arg Ser Leu  
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Arg Glu Ala Gln Ala Gly Glu Thr Glu Glu Ala Glu Thr Val Ser Ala  
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Met Ala Leu Leu Ser Val Gly Ala Glu Gln Ala Gln Ala Ala Ala  
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&lt;211&gt; 1215

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&lt;213&gt; Homo sapiens

&lt;400&gt; 6

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Arg Asn Ile Lys Lys Gly Ala Val Pro Arg Ser Ile Pro Asn Leu Ala
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Glu Val Lys Lys Lys Gly Lys Met Lys Lys Leu Gly Gln Ala Met Glu
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Glu Asp Leu Ile Val Gly Leu Gln Gly Met Asp Leu Asn Leu Glu Ala
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Glu Ala Leu Ala Gly Thr Gly Leu Val Leu Asp Glu Gln Leu Asn Glu
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Phe His Cys Leu Trp Asp Asp Ser Phe Pro Glu Gly Pro Glu Arg Leu
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His Ala Ile Lys Glu Gln Leu Ile Gln Glu Gly Leu Leu Asp Arg Cys
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Val Ser Phe Gln Ala Arg Phe Ala Glu Lys Glu Glu Leu Met Leu Val
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 195 200 205  
 Ile Ile Arg Pro Pro Gly His His Ala Gln His Ser Leu Met Asp Gly  
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 Tyr Cys Met Phe Asn His Val Ala Val Ala Ala Arg Tyr Ala Gln Gln  
 225 230 235 240  
 Lys His Arg Ile Arg Arg Val Leu Ile Val Asp Trp Asp Val His His  
 245 250 255  
 Gly Gln Gly Thr Gln Phe Thr Phe Asp Gln Asp Pro Ser Val Leu Tyr  
 260 265 270  
 Phe Ser Ile His Arg Tyr Glu Gln Gly Arg Phe Trp Pro His Leu Lys  
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 Ala Ser Asn Trp Ser Thr Thr Gly Phe Gly Gln Gly Gln Gly Tyr Thr  
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 Lys Gly Glu Met Ala Ala Thr Pro Ala Gly Phe Ala Gln Leu Thr His  
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Thr Gly Leu Val Tyr Asp Gln Asn Met Met Asn His Cys Asn Leu Trp  
485 490 495

Asp Ser His His Pro Glu Val Pro Gln Arg Ile Leu Arg Ile Met Cys  
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Arg Leu Glu Glu Leu Gly Leu Ala Gly Arg Cys Leu Thr Leu Thr Pro  
515 520 525

Arg Pro Ala Thr Glu Ala Glu Leu Leu Thr Cys His Ser Ala Glu Tyr  
530 535 540

Val Gly His Leu Arg Ala Thr Glu Lys Met Lys Thr Arg Glu Leu His  
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565 570 575

Ala Cys Ala Gln Leu Ala Thr Gly Ala Ala Cys Arg Leu Val Glu Ala  
580 585 590

Val Leu Ser Gly Glu Val Leu Asn Gly Ala Ala Val Val Arg Pro Pro  
595 600 605

Gly His His Ala Glu Gln Asp Ala Ala Cys Gly Phe Cys Phe Phe Asn  
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Ser Val Ala Val Ala Ala Arg His Ala Gln Thr Ile Ser Gly His Ala  
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Leu Arg Ile Leu Ile Val Asp Trp Asp Val His His Gly Asn Gly Thr  
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Gln His Met Phe Glu Asp Asp Pro Ser Val Leu Tyr Val Ser Leu His  
660 665 670

Arg Tyr Asp His Gly Thr Phe Phe Pro Met Gly Asp Glu Gly Ala Ser  
675 680 685

Ser Gln Ile Gly Arg Ala Ala Gly Thr Gly Phe Thr Val Asn Val Ala  
690 695 700

Trp Asn Gly Pro Arg Met Gly Asp Ala Asp Tyr Leu Ala Ala Trp His  
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Arg Leu Val Leu Pro Ile Ala Tyr Glu Phe Asn Pro Glu Leu Val Leu  
725 730 735

Val Ser Ala Gly Phe Asp Ala Ala Arg Gly Asp Pro Leu Gly Gly Cys  
740 745 750

Gln Val Ser Pro Glu Gly Tyr Ala His Leu Thr His Leu Leu Met Gly  
755 760 765



Leu Ala Ser Gly Arg Ile Ile Leu Ile Leu Glu Gly Gly Tyr Asn Leu  
770 775 780

Thr Ser Ile Ser Glu Ser Met Ala Ala Cys Thr Arg Ser Leu Leu Gly  
785 790 795 800

Asp Pro Pro Pro Leu Leu Thr Leu Pro Arg Pro Pro Leu Ser Gly Ala  
805 810 815

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Ser Leu Arg Val Met Lys Val Glu Asp Arg Glu Gly Pro Ser Ser Ser  
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Lys Leu Val Thr Lys Lys Ala Pro Gln Pro Ala Lys Pro Arg Leu Ala  
850 855 860

Glu Arg Met Thr Thr Arg Glu Lys Lys Val Leu Glu Ala Gly Met Gly  
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Lys Val Thr Ser Ala Ser Phe Gly Glu Glu Ser Thr Pro Gly Gln Thr  
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Asn Ser Glu Thr Ala Val Val Ala Leu Thr Gln Asp Gln Pro Ser Glu  
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915 920 925

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Tyr Cys Gln Ala Tyr Val His His Gln Ala Leu Leu Asp Val Lys Asn  
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 <213> Homo sapiens

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 Phe Leu Ala Gly Leu Gln Gln Gln Arg Ser Val Glu Pro Met Arg Leu  
 35 40 45  
 Ser Met Asp Thr Pro Met Pro Glu Leu Gln Val Gly Pro Gln Glu Gln  
 50 55 60  
 Glu Leu Arg Gln Leu Leu His Lys Asp Lys Ser Lys Arg Ser Ala Val

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Gln	Gln	Ala	Ala	Leu	Glu	Arg	Thr	Val	His	Pro	Asn	Ser	Pro	Gly	Ile		
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Pro	Tyr	Arg	Thr	Leu	Glu	Pro	Leu	Glu	Thr	Glu	Gly	Ala	Thr	Arg	Ser		
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Met	Leu	Ser	Ser	Phe	Leu	Pro	Pro	Val	Pro	Ser	Leu	Pro	Ser	Asp	Pro		
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Pro	Glu	His	Phe	Pro	Leu	Arg	Lys	Thr	Val	Ser	Glu	Pro	Asn	Leu	Lys		
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Thr	Leu	Gly	Asp	Ser	Ser	Pro	Ser	Ser	Ser	Ser	Thr	Pro	Ala	Ser	Gly		
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Cys	Ser	Ser	Pro	Asn	Asp	Ser	Glu	His	Gly	Pro	Asn	Pro	Ile	Leu	Gly		
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Asp	Ser	Asp	Arg	Arg	Thr	His	Pro	Thr	Leu	Gly	Pro	Arg	Gly	Pro	Ile		
225				230								235				240	
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Glu	Ala	Gly	Gly	Thr	Leu	Pro	Ser	Arg	Leu	Gln	Pro	Ile	Leu	Leu	Leu		
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Asp	Pro	Ser	Gly	Ser	His	Ala	Pro	Leu	Leu	Thr	Val	Pro	Gly	Leu	Gly		
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Pro	Leu	Pro	Phe	His	Phe	Ala	Gln	Ser	Leu	Met	Thr	Thr	Glu	Arg	Leu		
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Ser	Gly	Ser	Gly	Leu	His	Trp	Pro	Leu	Ser	Arg	Thr	Arg	Ser	Glu	Pro		
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370 375 380  
 Glu His Arg Glu Leu Gly His Gly Gln Pro Glu Ala Arg Gly Pro Ala  
 385 390 395 400  
 Pro Leu Gln Gln His Pro Gln Val Leu Leu Trp Glu Gln Gln Arg Leu  
 405 410 415  
 Ala Gly Arg Leu Pro Arg Gly Ser Thr Gly Asp Thr Val Leu Leu Pro  
 420 425 430  
 Leu Ala Gln Gly Gly His Arg Pro Leu Ser Arg Ala Gln Ser Ser Pro  
 435 440 445  
 Ala Ala Pro Ala Ser Leu Ser Ala Pro Glu Pro Ala Ser Gln Ala Arg  
 450 455 460  
 Val Leu Ser Ser Ser Glu Thr Pro Ala Arg Thr Leu Pro Phe Thr Thr  
 465 470 475 480  
 Gly Leu Ile Tyr Asp Ser Val Met Leu Lys His Gln Cys Ser Cys Gly  
 485 490 495  
 Asp Asn Ser Arg His Pro Glu His Ala Gly Arg Ile Gln Ser Ile Trp  
 500 505 510  
 Ser Arg Leu Gln Glu Arg Gly Leu Arg Ser Gln Cys Glu Cys Leu Arg  
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 His Val Leu Leu Tyr Gly Thr Asn Pro Leu Ser Arg Leu Lys Leu Asp  
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 Asn Gly Lys Leu Ala Gly Leu Leu Ala Gln Arg Met Phe Val Met Leu  
 565 570 575  
 Pro Cys Gly Gly Val Gly Val Asp Thr Asp Thr Ile Trp Asn Glu Leu  
 580 585 590  
 His Ser Ser Asn Ala Ala Arg Trp Ala Ala Gly Ser Val Thr Asp Leu  
 595 600 605  
 Ala Phe Lys Val Ala Ser Arg Glu Leu Lys Asn Gly Phe Ala Val Val  
 610 615 620  
 Arg Pro Pro Gly His His Ala Asp His Ser Thr Ala Met Gly Phe Cys  
 625 630 635 640  
 Phe Phe Asn Ser Val Ala Ile Ala Cys Arg Gln Leu Gln Gln Gln Ser  
 645 650 655  
 Lys Ala Ser Lys Ile Leu Ile Val Asp Trp Asp Val His His Gly Asn  
 660 665 670  
 Gly Thr Gln Gln Thr Phe Tyr Gln Asp Pro Ser Val Leu Tyr Ile Ser



675 680 685

Leu His Arg His Asp Asp Gly Asn Phe Phe Pro Gly Ser Gly Ala Val  
690 695 700

Asp Glu Val Gly Ala Gly Ser Gly Glu Gly Phe Asn Val Asn Val Ala  
705 710 715 720

Trp Ala Gly Gly Leu Asp Pro Pro Met Gly Asp Pro Glu Tyr Leu Ala  
725 730 735

Ala Phe Arg Ile Val Val Met Pro Ile Ala Arg Glu Phe Ser Pro Asp  
740 745 750

Leu Val Leu Val Ser Ala Gly Phe Asp Ala Ala Glu Gly His Pro Ala  
755 760 765

Pro Leu Gly Gly Tyr His Val Ser Ala Lys Cys Phe Gly Tyr Met Thr  
770 775 780

Gln Gln Leu Met Asn Leu Ala Gly Gly Ala Val Val Leu Ala Leu Glu  
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Gly Gly His Asp Leu Thr Ala Ile Cys Asp Ala Ser Glu Ala Cys Val  
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Ala Ala Leu Leu Gly Asn Arg Val Asp Pro Leu Ser Glu Glu Gly Trp  
820 825 830

Lys Gln Lys Pro Asn Leu Asn Ala Ile Arg Ser Leu Glu Ala Val Ile  
835 840 845

Arg Val His Ser Lys Tyr Trp Gly Cys Met Gln Arg Leu Ala Ser Cys  
850 855 860

Pro Asp Ser Trp Val Pro Arg Val Pro Gly Ala Asp Lys Glu Glu Val  
865 870 875 880

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885 890 895

Asp Arg Pro Ser Glu Gln Leu Val Glu Glu Glu Glu Pro Met Asn Leu  
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<213> Homo sapiens

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 <213> Homo sapiens

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 35 40 45  
 Glu Leu Leu Leu Ile Gln Gln Gln Gln Gln Ile Gln Lys Gln Leu Leu  
 50 55 60  
 Ile Ala Glu Phe Gln Lys Gln His Glu Asn Leu Thr Arg Gln His Gln  
 65 70 75 80  
 Ala Gln Leu Gln Glu His Ile Lys Glu Leu Leu Ala Ile Lys Gln Gln  
 85 90 95  
 Gln Glu Leu Leu Glu Lys Glu Gln Lys Leu Glu Gln Gln Arg Gln Glu  
 100 105 110  
 Gln Glu Val Glu Arg His Arg Arg Glu Gln Gln Leu Pro Pro Leu Arg  
 115 120 125  
 Gly Lys Asp Arg Gly Arg Glu Arg Ala Val Ala Ser Thr Glu Val Lys  
 130 135 140  
 Gln Lys Leu Gln Glu Phe Leu Leu Ser Lys Ser Ala Thr Lys Asp Thr  
 145 150 155 160  
 Pro Thr Asn Gly Lys Asn His Ser Val Ser Arg His Pro Lys Leu Trp  
 165 170 175  
 Tyr Thr Ala Ala His His Thr Ser Leu Asp Gln Ser Ser Pro Pro Leu  
 180 185 190  
 Ser Gly Thr Ser Pro Ser Tyr Lys Tyr Thr Leu Pro Gly Ala Gln Asp  
 195 200 205  
 Ala Lys Asp Asp Phe Pro Leu Arg Lys Thr Ala Ser Glu Pro Asn Leu  
 210 215 220

Lys Val Arg Ser Arg Leu Lys Gln Lys Val Ala Glu Arg Arg Ser Ser  
225 230 235 240

Pro Leu Leu Arg Arg Lys Asp Gly Asn Val Val Thr Ser Phe Lys Lys  
245 250 255

Arg Met Phe Glu Val Thr Glu Ser Ser Val Ser Ser Ser Ser Pro Gly  
260 265 270

Ser Gly Pro Ser Ser Pro Asn Asn Gly Pro Thr Gly Ser Val Thr Glu  
275 280 285

Asn Glu Thr Ser Val Leu Pro Pro Thr Pro His Ala Glu Gln Met Val  
290 295 300

Ser Gln Gln Arg Ile Leu Ile His Glu Asp Ser Met Asn Leu Leu Ser  
305 310 315 320

Leu Tyr Thr Ser Pro Ser Leu Pro Asn Ile Thr Leu Gly Leu Pro Ala  
325 330 335

Val Pro Ser Gln Leu Asn Ala Ser Asn Ser Leu Lys Glu Lys Gln Lys  
340 345 350

Cys Glu Thr Gln Thr Leu Arg Gln Gly Val Pro Leu Pro Gly Gln Tyr  
355 360 365

Gly Gly Ser Ile Pro Ala Ser Ser Ser His Pro His Val Thr Leu Glu  
370 375 380

Gly Lys Pro Pro Asn Ser Ser His Gln Ala Leu Leu Gln His Leu Leu  
385 390 395 400

Leu Lys Glu Gln Met Arg Gln Gln Lys Leu Leu Val Ala Gly Gly Val  
405 410 415

Pro Leu His Pro Gln Ser Pro Leu Ala Thr Lys Glu Arg Ile Ser Pro  
420 425 430

Gly Ile Arg Gly Thr His Lys Leu Pro Arg His Arg Pro Leu Asn Arg  
435 440 445

Thr Gln Ser Ala Pro Leu Pro Gln Ser Thr Leu Ala Gln Leu Val Ile  
450 455 460

Gln Gln Gln His Gln Gln Phe Leu Glu Lys Gln Lys Gln Tyr Gln Gln  
465 470 475 480

Gln Ile His Met Asn Lys Leu Leu Ser Lys Ser Ile Glu Gln Leu Lys  
485 490 495

Gln Pro Gly Ser His Leu Glu Glu Ala Glu Glu Glu Leu Gln Gly Asp  
500 505 510

Gln Ala Met Gln Glu Asp Arg Ala Pro Ser Ser Gly Asn Ser Thr Arg  
515 520 525

Ser Asp Ser Ser Ala Cys Val Asp Asp Thr Leu Gly Gln Val Gly Ala  
530 535 540

Val Lys Val Lys Glu Glu Pro Val Asp Ser Asp Glu Asp Ala Gln Ile  
545 550 555 560

Gln Glu Met Glu Ser Gly Glu Gln Ala Ala Phe Met Gln Gln Val Ile  
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Gly Lys Asp Leu Ala Pro Gly Phe Val Ile Lys Val Ile Ile  
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<210> 15

<211> 69

<212> PRT

<213> Homo sapiens

<400> 15

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Ile Val Leu Ala Ile Leu Glu Leu Leu Lys Tyr His Gln Arg Val Leu  
20 25 30

Tyr Ile Asp Ile Asp Ile His His Gly Asp Gly Val Glu Glu Ala Phe  
35 40 45

Tyr Thr Thr Asp Arg Val Met Thr Val Ser Phe His Lys Tyr Gly Glu  
50 55 60

Tyr Phe Pro Gly Thr  
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<210> 16

<211> 75

<212> PRT

<213> Saccharomyces sp.

<400> 16

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Val Ala Val Ala Ala Lys Asn Ile Leu Lys Asn Tyr Pro Glu Ser Val  
20 25 30

Arg Arg Ile Met Ile Leu Asp Trp Asp Ile His His Gly Asn Gly Thr  
35 40 45

Gln Lys Ser Phe Tyr Gln Asp Asp Gln Val Leu Tyr Val Ser Leu His  
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Arg Phe Glu Met Gly Lys Tyr Tyr Pro Gly Thr  
65 70 75

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sequence

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<222> (2)..(3)  
<223> Any amino acid

<220>  
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<223> Any amino acid

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Asn Xaa Xaa Gly Gly Xaa His His Ala  
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<210> 18  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Consensus  
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Arg Pro Pro Gly His His Ala  
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<210> 19  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
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<221> MOD\_RES  
<222> (3)  
<223> Phe or Tyr

<220>  
<221> MOD\_RES  
<222> (5)..(6)  
<223> Any amino acid

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Ser Gly Xaa Cys Xaa Xaa Asn  
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&lt;210&gt; 20

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Consensus  
sequence

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (2)

&lt;223&gt; Hydrophobic amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (4)

&lt;223&gt; Hydrophobic amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (11)

&lt;223&gt; Gln or Glu

&lt;400&gt; 20

Asp Xaa Asp Xaa His His Gly Asp Gly Val Xaa  
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&lt;210&gt; 21

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Consensus  
sequence

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (2)

&lt;223&gt; Hydrophobic amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (4)

&lt;223&gt; Hydrophobic amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (8)

&lt;223&gt; Any amino acid

&lt;400&gt; 21

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&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Consensus  
sequence

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (2)

&lt;223&gt; Any amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (4)

&lt;223&gt; Any amino acid

&lt;400&gt; 22

Val Xaa Thr Xaa Ser His  
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&lt;210&gt; 23

&lt;211&gt; 13

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Consensus  
sequence

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (2)

&lt;223&gt; Hydrophobic amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (4)

&lt;223&gt; Met or Leu

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (5)

&lt;223&gt; Any amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (11)



<223> Any amino acid

<220>

<221> MOD\_RES

<222> (12)

<223> Ser or Thr

<400> 23

Asn Xaa Pro Xaa Xaa Asp Gly Ile Asp Asp Xaa Xaa Tyr  
1 5 10

<210> 24

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus  
sequence

<220>

<221> MOD\_RES

<222> (1)

<223> Hydrophobic amino acid

<400> 24

Xaa Gly Gly Gly Gly Tyr  
1 5

<210> 25

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus  
sequence

<220>

<221> MOD\_RES

<222> (2)

<223> Hydrophobic amino acid

<400> 25

Asn Xaa Pro Leu Lys His Gly Cys Asp Asp Asn Tyr  
1 5 10

<210> 26

<211> 6

<212> PRT

<213> Homo sapiens

<400> 26

Gly Gly Tyr Glu Asn Pro

1

5

<210> 27  
<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 27  
Gly Glu Asp Cys Pro  
1 5

<210> 28  
<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 28  
Gly Glu Asp Cys Pro  
1 5

<210> 29  
<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 29  
Gly Asp Asp Cys Pro  
1 5

<210> 30  
<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 30  
Gly Tyr Asp Cys Pro  
1 5

<210> 31  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 31  
Gly Val Asp Ser Asp Thr  
1 5

<210> 32  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 32  
Gly Val Asp Ser Asp Thr  
1 5

<210> 33  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 33  
Gly Val Asp Thr Asp Thr  
1 5

<210> 34  
<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 34  
Glu Tyr Ala Phe Pro  
1 5

<210> 35  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 35  
Glu Tyr Phe Pro  
1

<210> 36  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 36  
Glu Tyr Phe Pro  
1

<210> 37  
<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 37  
Asn Tyr Phe Phe Pro  
1 5

<210> 38

<211> 5  
<212> PRT  
<213> Homo sapiens

<400> 38  
Pro Gly Phe Phe Pro  
1 5

<210> 39  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 39  
Asp Gly Trp Phe Phe Pro  
1 5

<210> 40  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 40  
Asn Gly Trp Phe Phe Pro  
1 5

<210> 41  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 41  
Gln Gly Arg Phe Trp Pro  
1 5

<210> 42  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 42  
His Gly Thr Phe Phe Pro  
1 5

<210> 43  
<211> 6  
<212> PRT  
<213> Homo sapiens

<400> 43  
Asp Gly Asn Phe Phe Pro  
1 5

<210> 44  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 44  
Pro Ala Gly Gly Met His His Ala  
1 5

<210> 45  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 45  
Trp Ala Gly Gly Leu His His Ala  
1 5

<210> 46  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 46  
Trp Ala Gly Gly Leu His His Ala  
1 5

<210> 47  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 47  
Trp Ala Gly Gly Leu His His Ala  
1 5

<210> 48  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 48  
Trp Ser Gly Gly Trp His His Ala  
1 5

<210> 49  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 49  
Arg Pro Pro Gly His His Ala  
1 5

<210> 50  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 50  
Arg Pro Pro Gly His His Ala  
1 5

<210> 51  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 51  
Arg Pro Pro Gly His His Ala  
1 5

<210> 52  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 52  
Arg Pro Pro Gly His His Ala  
1 5

<210> 53  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 53  
Arg Pro Pro Gly His His Ala  
1 5

<210> 54  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 54  
Tyr Ile Asp Leu Asp Ala His His Cys Asp  
1 5 10

<210> 55  
<211> 10

<212> PRT  
<213> Homo sapiens

<400> 55  
Tyr Ile Asp Ile Asp Ile His His Gly Asp  
1 5 10

<210> 56  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 56  
Tyr Ile Asp Ile Asp Ile His His Gly Asp  
1 5 10

<210> 57  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 57  
Tyr Ile Asp Ile Asp Ile His His Gly Asp  
1 5 10

<210> 58  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 58  
Tyr Val Asp Leu Asp Leu His His Gly Asp  
1 5 10

<210> 59  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 59  
Ile Val Asp Trp Asp Val His His Gly Asn  
1 5 10

<210> 60  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 60  
Ile Val Asp Trp Asp Ile His His Gly Asn  
1 5 10

<210> 61  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 61  
Ile Val Asp Trp Asp Val His His Gly Gln  
1 5 10

<210> 62  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 62  
Ile Val Asp Trp Asp Val His His Gly Asn  
1 5 10

<210> 63  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 63  
Ile Val Asp Trp Asp Val His His Gly Asn  
1 5 10

<210> 64  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 64  
Gly Gly Gly Tyr  
1

<210> 65  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 65  
Gly Gly Gly Tyr  
1

<210> 66  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 66



Gly Gly Gly Tyr  
1

<210> 67  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 67  
Gly Gly Gly Tyr  
1

<210> 68  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 68  
Gly Gly Gly Tyr  
1

<210> 69  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 69  
Glu Gly Gly His  
1

<210> 70  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 70  
Glu Gly Gly His  
1

<210> 71  
<211> 4  
<212> PRT  
<213> Homo sapiens

<400> 71  
Glu Gly Gly Tyr  
1

<210> 72  
<211> 4  
<212> PRT

<213> Homo sapiens

<400> 72

Glu Gly Gly Tyr

1

<210> 73

<211> 4

<212> PRT

<213> Homo sapiens

<400> 73

Glu Gly Gly His

1

<210> 74

<211> 74

<212> PRT

<213> Homo sapiens

<400> 74

His His Ala Glu Gln Asp Ala Ala Cys Gly Phe Cys Phe Phe Asn  
1 5 10 15

Ser Val Ala Val Ala Ala Arg His Ala Gln Thr Ile Ser Gly His Ala  
20 25 30

Leu Arg Ile Leu Ile Val Asp Trp Asp Val His His Gly Asn Gly Thr  
35 40 45

Gln His Met Phe Glu Asp Asp Pro Ser Val Leu Tyr Val Ser Leu His  
50 55 60

Arg Tyr Asp His Gly Thr Phe Phe Pro Met Gly  
65 70

<210> 75

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Consensus  
sequence

<220>

<221> MOD\_RES

<222> (2)

<223> Cys or Thr

<220>

<221> MOD\_RES

<222> (4)

<223> Val or Ile

&lt;400&gt; 75

Asp Xaa Pro Xaa Phe  
1 5

&lt;210&gt; 76

&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Consensus  
sequence

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (2)

&lt;223&gt; Phe or Tyr

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (4)..(5)

&lt;223&gt; Any amino acid

&lt;400&gt; 76

Gly Xaa Cys Xaa Xaa Asn  
1 5

&lt;210&gt; 77

&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Consensus  
sequence

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (2)

&lt;223&gt; Any amino acid

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (3)

&lt;223&gt; Val or Phe

&lt;220&gt;

&lt;221&gt; MOD\_RES

&lt;222&gt; (5)

&lt;223&gt; Any amino acid

&lt;400&gt; 77

Val Xaa Thr Ser Xaa His  
1 5

<210> 78  
<211> 5  
<212> PRT  
<213> Artificial Sequence  
  
<220>  
<223> Description of Artificial Sequence: Consensus  
sequence

<220>  
<221> MOD\_RES  
<222> (1)  
<223> Hydrophobic amino acid

<220>  
<221> MOD\_RES  
<222> (5)  
<223> Tyr or His

<400> 78  
Xaa Glu Gly Gly Xaa  
1 5

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